

New and unrecorded clearwing moths of the genus *Melittia* Hübner, [1819] (Lepidoptera, Sesiidae) from Thailand*

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Abstract Species from Thailand of the genus *Melittia* Hübner, [1819] are reviewed. Two new species, *M. sukothai* sp. nov. and *M. bella* sp. nov., are described and figured. Further three species, *M. eurytion* (Westwood, 1848), *M. nepcha* Moore, 1879, and *M. gorochovi* Gorbunov, 1988, are recorded from Thailand for the first time. Besides, *M. gorochovi* is redescribed and figured in due detail.

Key words Taxonomy, Lepidoptera, Sesiidae, *Melittia*, *M. eurytion*, *M. nepcha*, *M. gorochovi*, *M. bella* sp. nov., *M. sukothai* sp. nov., Oriental region, Thailand.

The present paper is based on a rather abundant material of clearwing moths (Lepidoptera, Sesiidae) collected in Thailand by the members of the lepidopterological expeditions of the University of Osaka Prefecture (now Osaka Prefecture University) in 1985 and 1987 (Kuroko & Moriuti, 1987; Moriuti, 1989). Besides, some additional samples collected in Thailand by other lepidopterists have been incorporated as well.

This article continues our investigations of Oriental Sesiidae (*e. g.* Arita & Gorbunov, 1995*a-d*; Gorbunov & Arita, 1995*a-d*), being restricted solely to the genus *Melittia* Hübner, [1819]. Other genera of the Thai clearwing moths are currently under study and will be put on record elsewhere.

Species of *Melittia* represent a highly interesting group of Sesiidae. First, they are a typical example of Batesian mimicry, mimicking various species of bumble-bees (*Bombus*, Apidae, Hymenoptera) both in their behaviour and appearance. Second, in our opinion this genus is quite compact and well-defined against its closest relatives within the tribe Melittiini, especially in the male and female genitalia. At the moment, *Melittia* encompasses about 50 species described from tropical and subtropical areas of the Palearctic, Oriental and Australian regions. However, one must keep in mind that the identities of numerous taxa, both of species and generic levels, described from the Afrotropical region and, especially, from the New World still remain obscure. They badly need a substantial revision, and at least some are very likely to actually represent further *Melittia*. Besides, many more new congeners are surely to be revealed, as proven also by this paper. In other words, we certainly face a rather species-rich tropical and subtropical clearwing moth genus.

Prior to this study, only a single species of *Melittia*, *M. siamica* Walker, [1865], has been known from Thailand, with the holotype having been revised recently (Arita & Gor-

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bunov, 1995*d*). Further five *Melittia* species have turned out in the Thai materials accumulated for this study. Three of them, *M. eurytion* (Westwood, 1848), *M. nepcha* Moore, 1879 and *M. gorochovi* Gorbunov, 1988 are rather well-known, hitherto encountered only in the adjacent Oriental areas and represent the first records in Thailand. The remaining two species appear new to science and are described here.

All materials examined or cited herein are kept in the following collections abbreviated in the text as follows:

BMNH — The Natural History Museum, London, England,

CG — collection of O. Gorbunov, Moscow, Russia,

MNHP — Muséum National d'Histoire Naturelle, Paris, France,

MUT — Zoological Laboratory, Faculty of Agriculture, Meijo University, Nagoya, Japan,

NSMT — National Science Museum, Tokyo, Japan,

OPU — Entomological Laboratory, Osaka Prefecture University, Sakai, Osaka, Japan.

ZMC — Zoologisk Museum, Copenhagen, Denmark,

ZMHB — Museum für Naturkunde, Zentralinstitut der Humboldt-Universität zu Berlin, Germany.

***Melittia eurytion* (Westwood) (Figs 1-3, 9, 11-12)**

Trochilium eurytion Westwood, 1848: 62, pl. 30, fig. 5. Type locality: "India, Sylhet" [=NE. Bangladesh, Sylhet]. Lectotype female (BMNH, fixed by Spatenka, 1992); Hampson, [1893]: 203, fig. 131; Le Cerf, 1916: 8, pl. 373, figs 3114-3115; Le Cerf, 1917: 176, fig. 4; Hampson, 1919: 92; Dalla Torre & Strand, 1925: 143; Gaede, 1933: 790, pl. 95, row f; Diakonoff, [1968]: 233, figs 726-727; Heppner & Duckworth, 1981: 26; Spatenka *et al.*, 1993: 89; Arita & Gorbunov, 1995*c*: 196, figs 830, 835, 838, pl. 108, figs 20-21.

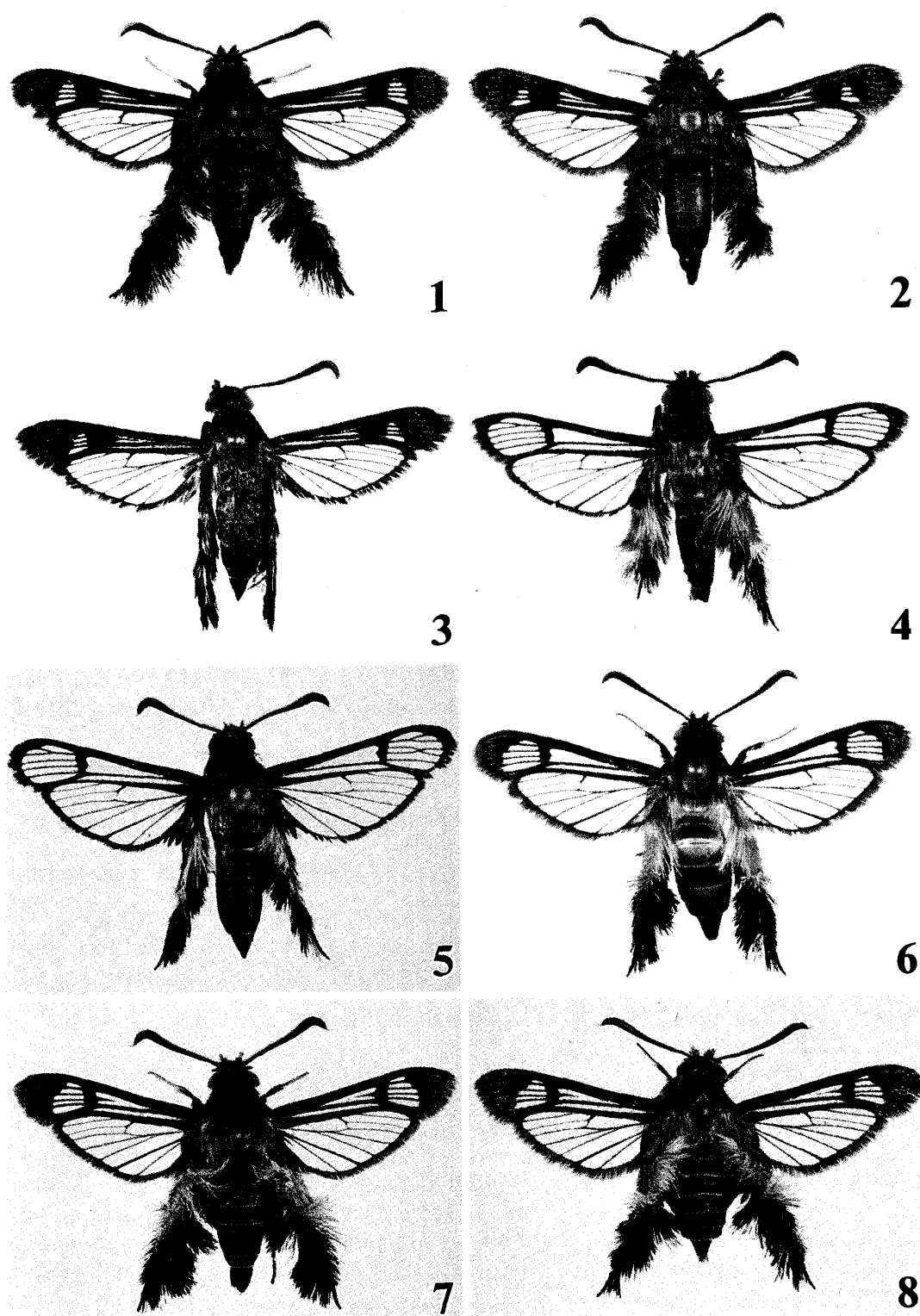
This species has been redescribed by us in due detail, including both male and female genitalia (Arita & Gorbunov, 1995*c*; Gorbunov & Arita, in press). *M. eurytion* represents a highly variable species among the Oriental congeners. It strongly varies in individual size (alar expanse 25-34 mm), in the number of coloured scales of the various parts of the body, and in the size and shape of the external transparent area of the forewing (Fig. 9). The male genitalia, especially the shape of the valvae, are variable as well (*cp.* Fig. 11 and Arita & Gorbunov, 1995*c*: fig. 830; Gorbunov & Arita, in press: fig. 13).

Bionomics. Exact host plant is yet unknown, but it seems to belong to the family Cucurbitaceae (*Trichosanthes*). Imagines were collected in Thailand in July-September. In addition, in other areas, this species was netted in the spring time, too (April-May). Apparently, *M. eurytion* is bivoltine. Some specimens were attracted by light (black light and mercury lamp) shortly before dawn.

Habitat. Road sides in tropical forest.

Distribution. This species has been reported from West and South China, Nepal, West (Bombay), Northeast (Sikkim) and East India (Assam), Bangladesh, Sri Lanka, Myanmar (=Burma), Vietnam, Philippines (Luzon, Mindanao, Palawan). The following are the first record in Thailand.

Material examined. 5 ♂, Thailand, Chiang Mai, Fang, ca 450 m, 13-16. IX. 1987, S. Moriuti, T. Saito, Y. Arita & Y. Yoshiyasu leg. (one specimen with genital preparation No. 1369 YA) (OPU); 1 ♂, Thailand, Chaiphaphum, Chulabhorn Dam, ca 700 m, 14. VIII. 1987, S. Moriuti, T. Saito, Y. Arita & Y. Yoshiyasu leg. (OPU); 1 ♂, Thailand, Loei, Phu Luang, 700-900 m, 8-14. X. 1984, Karsholt, Lomholdt & Nielsen leg. (ZMC); 1 ♂,



Figs 1-8. *Melittia* spp. 1. *M. eurytion* (Westwood, 1848), ♂. Alar expanse 31.2 mm. 2. *Ditto*, ♂ (MUT). Alar expanse 31.0 mm. 3. *Ditto*, ♂. Alar expanse 31.0 mm. 4. *M. nepcha* Moore, 1879, ♂. Alar expanse 27.0 mm. 5. *M. sukothai* sp. nov., ♂, holotype. Alar expanse 27.1 mm. 6. *M. bella* sp. nov., ♀, holotype. Alar expanse 27.6 mm. 7. *M. gorochovi* Gorbunov, 1988, ♂. Alar expanse 29.5 mm. 8. *Ditto*, ♀. Alar expanse 32.2 mm.

Thailand, Chiang Mai, 23. VI. 1985 (genital preparation No. GA-113) (MUT); 1 ♀, Thailand, Chiang Mai, 11. VII. 1985 (genital preparation No. GA-128) (MUT).

***Melittia nepcha* Moore (Fig. 4)**

Melittia nepcha Moore, 1879: 10. Type locality: Darjiling [=NE. India, West Bengal, Darjeeling]. Holotype male (ZMHB); Hampson, [1893]: 205; Hampson, 1919: 87; Dalla Torre & Strand, 1925: 146 (as *M. nepcha* [sic!]); Gaede, 1933: 789 (as a synonym of *M. amboinensis* Felder, 1861); Heppner & Duckworth, 1981: 27; Gorbunov & Arita, 1995*d*: 219, figs 9-10, 23; Arita & Gorbunov, 1995*c*: 197, figs 829, 834, 837, pl. 108, figs 22-23.

Melittia amboinensis var. *asiatica* Le Cerf, 1917: 197. Type locality: Darjeeling [=NE. India, West Bengal, Darjeeling]. Lectotype male (MNHP, fixed by Gorbunov & Arita, 1995*d*); Hampson, 1919: 88 (as a variety of *M. amboinensis*); Dalla Torre & Strand, 1925: 137 (as a variety of *M. amboinensis*); Gaede, 1933: 789 (as a variety of *M. amboinensis*); Heppner & Duckworth, 1981: 26 (as a variety of *M. amboinensis*); Gorbunov & Arita, 1995*d*: 219 (as a synonym of *M. nepcha*).

Melittia amboinensis vietnamica Gorbunov, 1988: 195, figs 2, 4-2. Type locality: N. Vietnam, Shonla Prov., Shongma. Holotype male (CG); Gorbunov & Arita, 1995*d*: 210 (as a synonym of *M. nepcha*).

Both male and female, including their genitalia, have just been redescribed in due detail (Arita & Gorbunov, 1995*c*; Gorbunov & Arita, 1995*d*). The present male specimen from Thailand (Fig. 4) displays virtually no differences in colour patterns from the holotype. The external transparent area of the forewing of the Thai specimen is somewhat broader than that in the holotype and other specimens studied (*cp.* Gorbunov & Arita, 1995*d*: fig. 9, and Arita & Gorbunov, 1995*c*: pl. 108, fig. 22).

Bionomics. The host plant is unknown. The specimen from Thailand has been taken in the beginning of June.

Habitat. Unknown.

Distribution. Nepal, NE India (Darjeeling), Thailand (the first record!) and N Vietnam.

Material examined. 1 ♂, Thailand, Chiang Mai, Doi Suthep, 3. VI. 1982, M. Kimura leg. (MUT).

***Melittia sukothai* sp. nov. (Figs 5, 13)**

Description. Male (holotype) (Fig. 5). Alar expanse 27.1 mm; body length 15.5 mm; forewing 12.0 mm; antenna 6.3 mm.

Head: antenna dorsally black with blue-violet sheen, with a few individual snow-white scales at anterior margin; ventrally light brown with a small, vague, yellow spot subapically and with a few snow-white scales in basal third between cilia; frons grey-brown to dark grey with purple sheen, with a narrow white stripe laterally; labial palpus dark brown to black dorsally, basal joint white ventrally; 2nd joint white with two longitudinal, relatively broad, black stripes at margins; 3rd one black mixed with pale yellow; vertex dark brown to black mixed with pale yellow and yellow hair-like scales, with a few short yellow scales at ocelli anteriorly; pericephalic hairs black mixed with yellow dorsally and pale yellow to white laterally. Thorax: patagium dorsally dark brown to black with green-bronze sheen, with admixture of olive-brown scales, ventrally with a small pale yellow to white spot; tegula, meso- and metathorax dark brown with bronze-purple sheen, densely covered with olive-green scales; laterally thorax dark grey with purplish sheen, with a few pale yellow to white scales. Legs: fore coxa white with yellowish hue, with a broad black stripe externally; fore femur black with a white posterior margin; fore tibia black with purplish sheen, with a few white scales dorsally

and black mixed with yellow ventrally; fore tarsus dorsally black with purplish sheen, ventrally yellow with admixture of black scales; mid femur dark brown with purplish sheen externally and pale yellow to white internally; mid tibia black with green-violet sheen, with a small, vague, white spot with blue hue medio-externally; basal tarsomere of mid tarsus black with green-purple sheen, with a broad white ring basally; remaining tarsomeres black with green-purple sheen, with a small white spot baso-internally; hind femur black with purplish sheen, with a narrow pale yellow line at anterior margin; hind tibia black with green-purple sheen, with a small, vague, white spot with blue hue at base of mid spurs externally, pale yellow with admixture of individual black scales dorsally; spurs entirely black with greenish sheen; hind tarsus black with greenish sheen, with a few white scales with blue hue on two basal tarsomeres externally. Abdomen: dorsally dark brown to black with green-violet sheen; tergite 1 densely covered with olive-yellow scales laterally; tergites 2 and 4 each with a narrow, yellow, distal margin; distal margin of 3rd tergite with a few yellow scales laterally; tergite 7 with a few yellow scales distally; yellow with admixture of individual dark brown scales ventrally; anal tuft small, black with a few yellow scales ventrally.

Forewing: basally black with a few olive-green and brown scales; costal and anal margins, Cu-stem, discal spot, veins within external transparent area entirely black with violet sheen; discal spot narrow with a small, obtuse, cuneiform projection proximally; apical area extremely narrow, developed at wing tip only; veins M_1 and M_2 of right wing jointed medially (abnormal); transparent areas well-developed; external transparent area extremely large, rounded apically, divided into six cells, *ca* 6 times as broad as discal spot; cilia dark brown with bronze-violet sheen. Hindwing: transparent; anal area dark brown to black with violet sheen, with a few pale yellow scales and yellow hairs; veins and outer margin black with violet sheen; discal spot extremely narrow; outer margin narrow, *ca* twice as narrow as cilia; latter dark brown with bronze-violet sheen.

Male genitalia (genital preparation No. GA-114) (Fig. 13). Tegumen-uncus complex narrow; uncus bilobed distally with a small and narrow plate of strong pointed setae internally on each side; gnathos small, membranous, with a relatively large triangular-oval plate of sclerotization medially (Fig. 13a); valva (Fig. 13b) relatively narrow, slightly broadened distally; distal field of setae rather well separated from medial one; medial field with short setae, not separated from these of ventral lobe; a pocket-shaped crista small, narrow; ventral lobe broad and short, nearly not exceeding distal margin; saccus relatively broad, club-like basally (Fig. 13c); aedeagus (Fig. 13d) narrow, nearly as long as valva, with a small well-sclerotized crista latero-distally; vesica with a few minute cornuti.

Female. Unknown.

Variability. Unknown.

Diagnosis. This species is somewhat similar to *M. newara* Moore, 1879, but it can be separated by the coloration of the vertex (dark brown to black mixed with yellow in *newara*), hind leg tuft (dark brown to black with admixture of olive-brown and yellow scales dorsally in the species compared), abdomen dorsally (dark brown to black with purplish sheen; tergite 2 covered with thin olive-green scales basally; tergites 2 and 3 each with a narrow yellow margin distally in *newara*), by the form of the discal spot of the forewing (with a narrow and long projection proximally in *newara*) and the anal area of the hindwing (dark brown to black with a narrow yellow stripe in the species compared). From other closely related species (*M. gorochovi* Gorbunov, 1988, *M. callosoma* Hampson, 1910, *M. indica* Butler, 1874, *M. kulluana* Moore, 1888 and *M.*

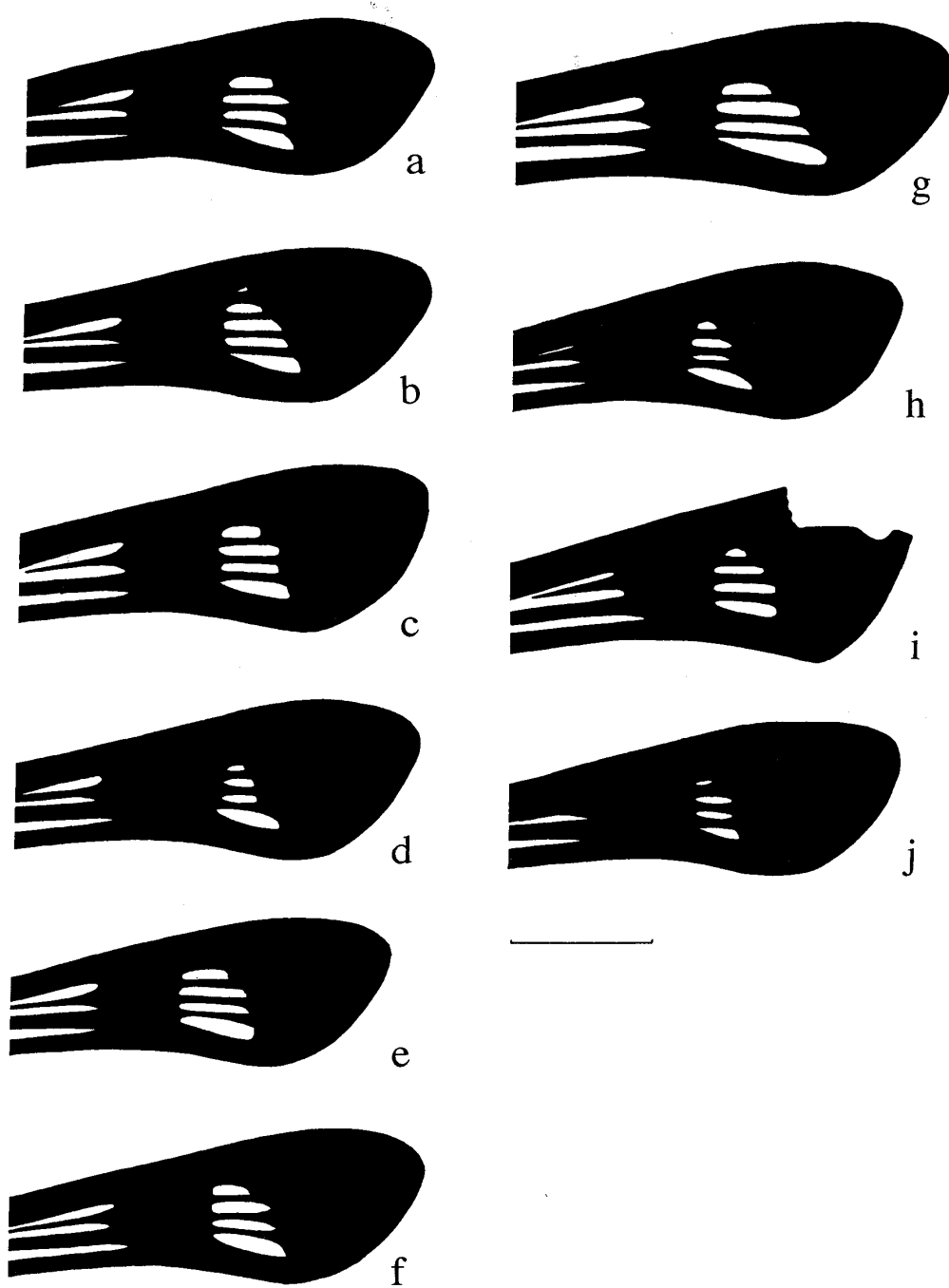


Fig. 9. Variability of the external transparent area of the forewing (without cilia) of *Melittia eurytion* (Westwood, 1848) (a-h: male, i-j: female). Scale bar: 3.0 mm (a: Thailand, Chaiphum, Chulabhorn Dam, 700 m, 14. VIII. 1987, b-f: Thailand, Chiang Mai, Fang, 450 m, 13-16. IX. 1987, g: Thailand, Loei prov., Phu Luang, 700-900 m, 8-14. X. 1984, i: Bangladesh, Sylhet (lectotype), j: Thailand, Chiang Mai, 11. VII. 1985).

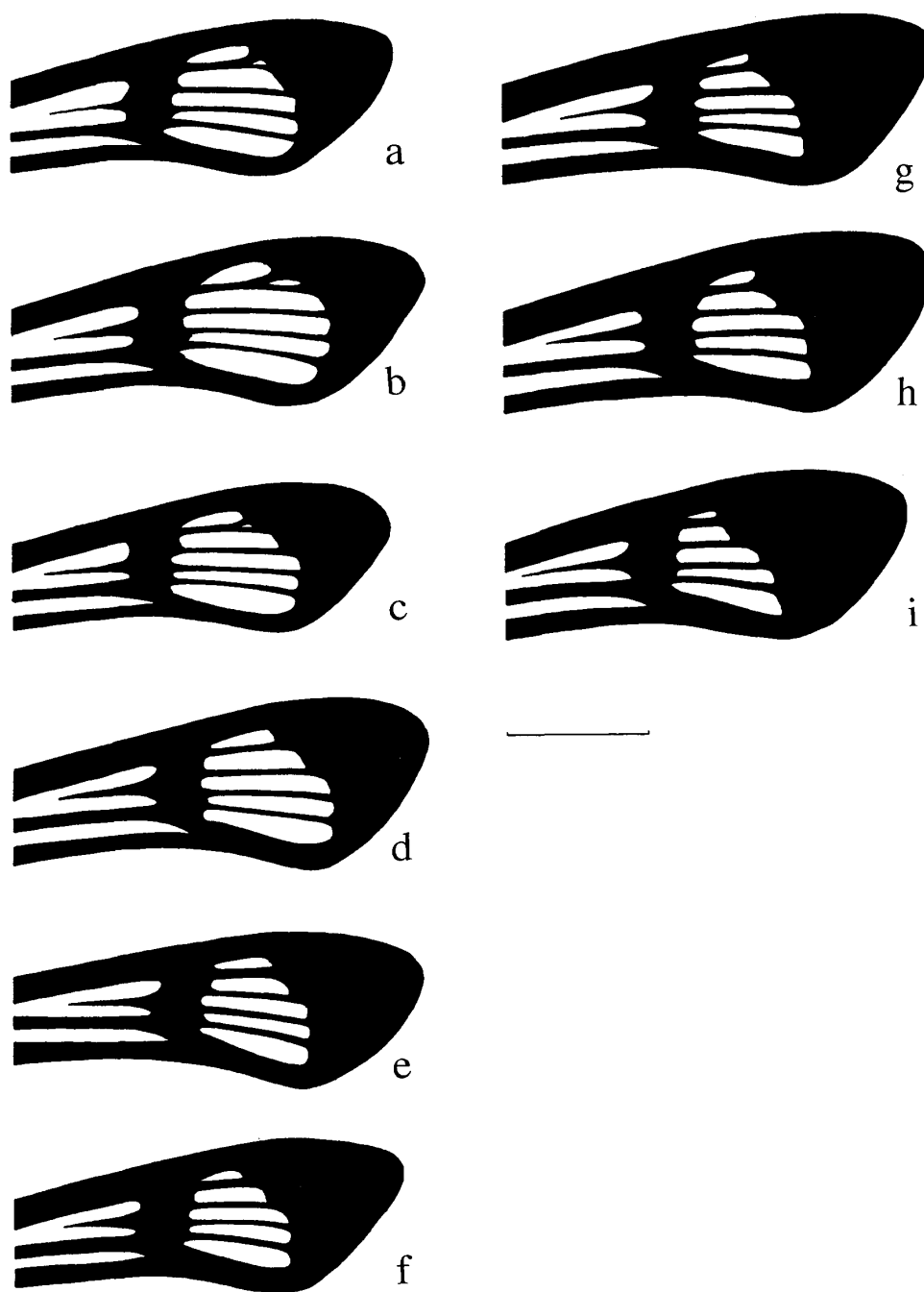
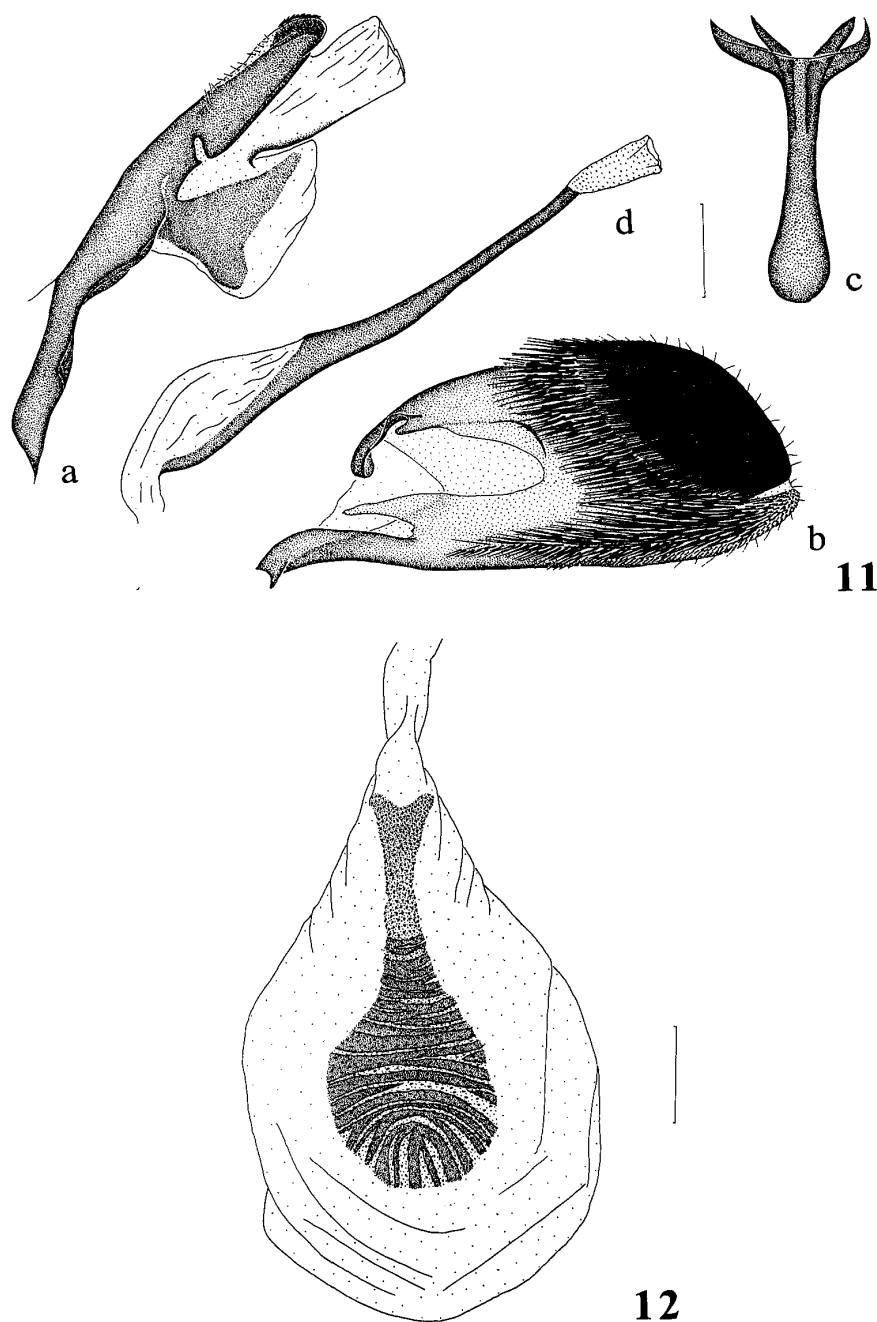


Fig. 10. Variability of the external transparent area of the forewing (without cilia) of *Melittia gorochovi* Gorbunov, 1988 (a-f: male, g-i: female). Scale bar: 3.0 mm (a: Vietnam, Shongma (holotype), b: Thailand, Chiang Mai, Doi Inthanon (Mae Klang), 1,300 m, 8-12. IX. 1987, c-d: Thailand, Chiang Mai, Fang, 450 m, 29-31. X. 1985, e: Thailand, Chiang Mai, Ban Toyak, 450 m, 13. IX. 1987, f: Thailand, Chanthaburi, Khao Soi Dao, 400 m, 7-8. X. 1985, g-h: Thailand, Chiang Mai, Doi Inthanon (Mae Klang), 1,300 m, 8-12. IX. 1987, i: Thailand, Chiang Mai, Fang, 450 m, 29-31. X. 1985.



Figs 11-12. Genitalia of *M. eurytion* (Westwood, 1848). 11. Male (genital preparation No. GA-113) (a: tegumen-uncus complex, b: valva, c: saccus, d: aedeagus). 12. Corpus bursae of the female (genital preparation No. GA-128). Scale bar: 0.5 mm.

proxima Le Cerf, 1917), *sukothai* sp. nov. is distinguishable by the larger external transparent area of the forewing (relatively narrow, divided into 5-6 cells in all these species compared) and by the shape of the discal spot of the forewing (with a relatively long, narrow, cuneiform projection proximally in those species compared). Besides that, *sukothai* sp. nov. clearly differs from all these congeners in the structure of the male genitalia, especially in the shape of the valva.

Bionomics. The host plant is unknown. The holotype has been netted in the second

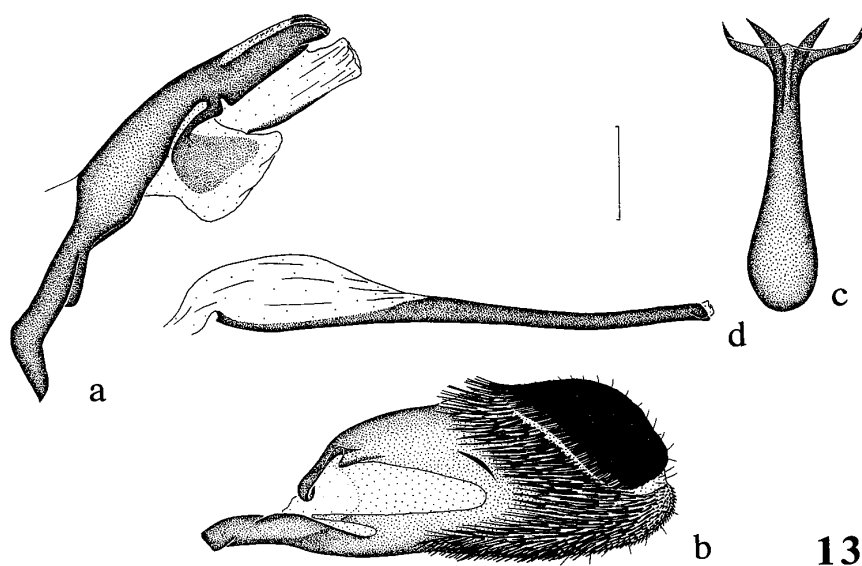


Fig. 13. Male genitalia of *M. sukothai* sp. nov. (genital preparation No. GA-114) (a: tegumen-uncus complex, b: valva, c: saccus, d: aedeagus). Scale bar: 0.5 mm.

half of August.

Habitat. Unknown.

Material examined. 1 ♂ (holotype), NE Thailand, Loei, Phu Rua Nat. Park, 1,200 m, 21. VIII. 1987, H. Ono leg. (genital preparation No. GA-114) (NSMT).

Etymology. This new species is named after Sukothai, the first larger Thai state which was springing up in the XIII century A. D., where Thailand is currently situated.

***Melittia bella* sp. nov.** (Figs 6, 14, 16)

Description. Female (holotype) (Fig. 6). Alar expanse 27.6 mm; body length 13.0 mm; forewing 11.6 mm; antenna 6.2 mm.

Head: antenna dorsally black with dark violet sheen, with a few individual snow-white scales, ventrally light brown with admixture of dense yellow scales; frons dark grey with bronze-purple sheen, with a few white scales medially and with a narrow white stripe laterally; basal joint of labial palpus white with yellowish hue, with a few black scales externally; 2nd joint white with two narrow black stripes ventrally; 3rd joint pale yellow to yellow with two narrow black stripes externally; vertex black mixed with yellow and white hair-like scales; pericephalic hairs black mixed with white, laterally entirely white. Thorax: patagium dark brown to black with bright violet sheen, with a small white spot laterally; tegula black with blue-violet sheen, with an orange tip; mesothorax black with blue-violet sheen; metathorax entirely orange; besides that, tegula and mesothorax covered with yellow-orange hair-like scales; laterally, thorax dark grey with violet sheen, with admixture of white and pale yellow scales with golden hue. Legs: fore coxa white to pale yellow with a few black hair-like scales, with a vague black stripe externally; fore femur black with admixture of white and yellow scales ventro-externally; fore tibia and tarsus black with violet sheen dorsally and pale yellow with pinkish hue ventrally; mid femur internally and anteriorly white, externally black with bronze-violet sheen, with a few white scales; mid tibia black with green-violet sheen, with a large white spot with blue hue medio-externally; spurs entirely black with green sheen; mid tarsus orange mixed with white internally;

externally, three basal tarsomeres white mixed with orange basally and black with green-violet sheen distally; two apical tarsomeres black externally; hind femur internally and anteriorly white, externally black with bronze-violet sheen, with a few white scales; hind tibia orange with black scales both basally and apically, with two small white spots medio-externally and at base of apical spurs; spurs black with greenish sheen; an exterior apical spur with white scales internally; hind tarsus black with green-violet sheen, with admixture of light brown-orange and white scales basally. Abdomen: dorsally, tergites 2, 3, 4, 5 and 6 each with a narrow yellow-orange stripe distally; tergite 1 broadly orange laterally and black with green-violet sheen dorsally; tergite 2 orange with a large, elongate, black spot medially; tergite 3 orange with a narrow black stripe subdistally; tergite 4 black with dark violet sheen, densely covered with orange scales laterally; tergite 5 black with dark blue-violet sheen, mixed with orange scales proximally; tergite 6 black with dark violet sheen; laterally and ventrally, abdomen entirely yellow-orange; anal tuft small, dorsally black with blue-violet sheen, ventrally yellow-orange.

Forewing: baso-anally black mixed with orange and yellow scales; costal margin black with bronze-violet sheen, with a narrow orange line between Sc and R-stem; anal margin and Cu-stem black with bronze-violet sheen, with admixture of individual dark orange scales; discal spot and veins within external transparent area black with dark violet sheen, with a few orange scales at margins; apical area black with dark violet sheen, with individual snow-white scales between veins; discal spot relatively narrow with a short, obtuse, cuneiform projection proximally; apical area rather broad, broadened costally; transparent areas well-developed, covered with hyaline scales with yellowish hue; external transparent area divided into five cells, level to veins M_2 - M_3 about thrice broader than discal spot and *ca* 1.5 times narrower than apical area; cilia dark grey with bronze sheen. Hindwing: transparent; anal area orange mixed with black scales distally; veins and outer margin black with bronze-violet sheen; discal spot undeveloped, but cross-vein narrowly covered with black scales; outer margin narrow, about thrice as narrow as cilia; cilia dark grey with bronze sheen.

Female genitalia (paratype, genital preparation No. GA-129) (Figs 14, 16). Papilla anales slightly sclerotized, covered with relatively short setae; both apophyses nearly equal in length, anterior apophysis with a long, narrow appendix baso-ventrally; tergite 8 relatively broad with rather long setae at distal and inner margins ventrally; ostium bursae opening near posterior margin of sternite 7, slightly funnel-shaped, relatively broadly well-sclerotized; antrum narrow, membranous; ductus bursae narrow, long, membranous; corpus bursae globose to ovoid, membranous with signum relatively large, broadly pyriform, medially with about ten transverse, well-sclerotized, dentate stripes, bifurcate and ringed around base of corpus bursae posteriorly (Fig. 16).

Male. Unknown.

Variability. The second female specimen (paratype) displays virtually no differences in coloration from the holotype. It is slightly larger only: alar expanse 28.2 mm; body length 14.2 mm; forewing 12.2 mm; antenna 6.5 mm.

Diagnosis. This new species seems to be closest to the *amboinensis* species-group. Le Cerf (1916) first described many species, but then he (1917) treated them only as varieties of *M. amboinensis*. Yet the identity of all his taxa remains unclear. By the shape of the external transparent area of the forewing, *bella* sp. nov. is similar to *celebica* Le Cerf, 1916, *meeki* Le Cerf, 1916, and *marangana* Le Cerf, 1916. From the first taxon compared, our new species can be distinguished by the coloration of the frons (grey-brown with bronze-purple sheen, with a narrow white stripe both laterally and ventrally

in *celebica*), thorax dorsally (tegula, meso- and metathorax dark brown to black with bronze-violet sheen, densely covered with rusty-brown scales in *celebica*), hind tibia and tarsus (hind tibia internally mixed with rusty-orange and white scales, externally black with green-violet sheen, mixed with rusty-orange to orange scales, with two white spots being at base of mid spurs and between bases of both pairs of spurs; two apical tarsomeres of hind tarsus orange in *celebica*), abdomen dorsally (black with purple sheen, with a narrow, dirty light brown-orange distal margin on each tergite; tergites 3 and 7 densely covered with rusty-orange scales in proximal half; tergite 5 entirely rusty-orange to orange; other tergites with admixture of individual rusty-orange scales proximally in *celebica*) and anal area of the hindwing (dark brown to black with a few white scales and yellow hairs in *celebica*). From *meeki*, *bella* sp. nov. differs by the coloration of the hind tibia and tarsus (hind tibia narrowly black basally; internally white in basal half and light brown in apical half; ventrally dark brown to black with green-purple sheen, with a few white scales with blue hue at midway between base of tibia and base of medial spurs, and with a small white spot between bases of both pairs of spurs; dorso-externally orange with two groups of white scales: at midway between base of tibia and level of base of medial spurs, and level to apical spurs; spurs dark brown to black with green-purple sheen, both external spurs with orange to yellow scales internally; basal tarsomere of hind tarsus dark brown to black with green-purple sheen internally and orange externally, dorso-basally with a few light brown and white scales; remaining tarsomeres orange with a few black scales ventrally in *meeki*), and abdomen dorsally (dark brown to black with dark purple sheen; tergites 1, 3, 5 and 7 densely covered with dirty orange scales, masking background coloration; tergites 2, 4 and 6 with admixture of dirty orange scales laterally and proximally; besides that, all tergites with a narrow dirty orange stripe distally in *meeki*). From *marangana*, our new species can be easily distinguished by the shape of the discal spot of the forewing (with a relatively long and narrow cuneiform projection proximally in *marangana*) and coloration of the legs and abdomen. From other taxa of the *amboinensis* species-group, namely *nepcha* Moore, 1879, *doddi* Le Cerf, 1916, *javana* Le Cerf, 1916, and *batchiana* Le Cerf, 1916, *bella* sp. nov. differs in the shape of the discal spot and external transparent area of the forewing and coloration of various parts of the body, especially legs and abdomen.

Bionomics. The host plant is unknown. The type series has been collected in lowlands at an altitude of 30 m in the beginning of October.

Habitat. Edges of a tropical orchard.

Material examined. 1 ♀ (holotype), Thailand Chanthaburi, Phliu, 30 m, 4-7 & 9. X. 1985, H. Kuroko, S. Moriuti, T. Saito & Y. Arita leg. (OPU); 1 ♀ (paratype), same locality and date, H. Kuroko, S. Moriuti, T. Saito & Y. Arita leg. (genital preparation No. GA-129) (OPU).

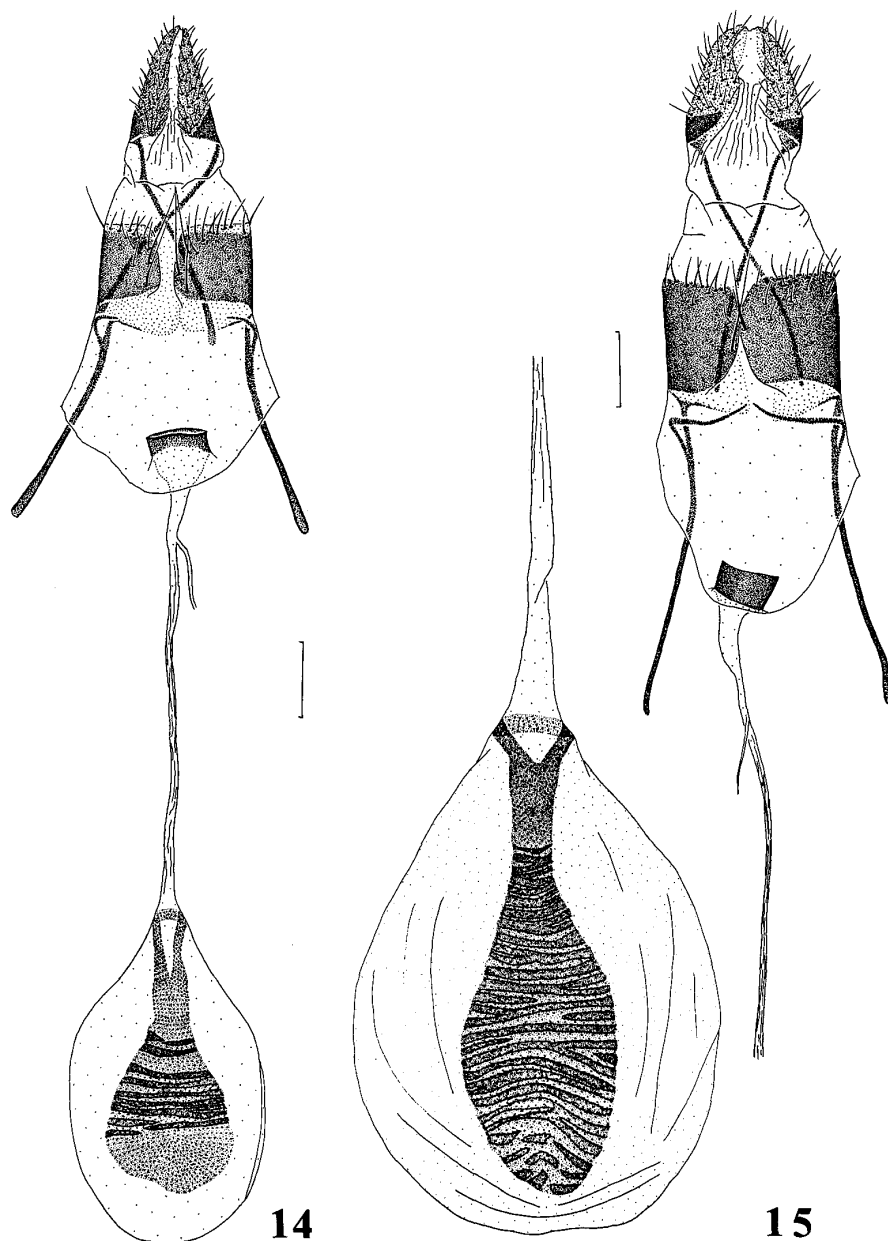
Etymology. The name of this handsome species emphasizes its beauty.

***Melittia gorochovi* Gorbunov (Figs 7-8, 10, 15, 17)**

Melittia gorochovi Gorbunov, 1988: 195, figs 3-1, 4-1. Type locality: Vietnam, Shonla Prov., Shongma. Holotype male (CG).

Melittia indica: Le Cerf, 1917: 182, pl. 476, fig. 3922 (nec Butler, 1874).

The male (holotype) of this species will be redescribed elsewhere (Gorbunov & Arita, in press). The female has hitherto remained unknown. At the present, we have seen a rather numerous series, including females, of this species deriving from Thailand.

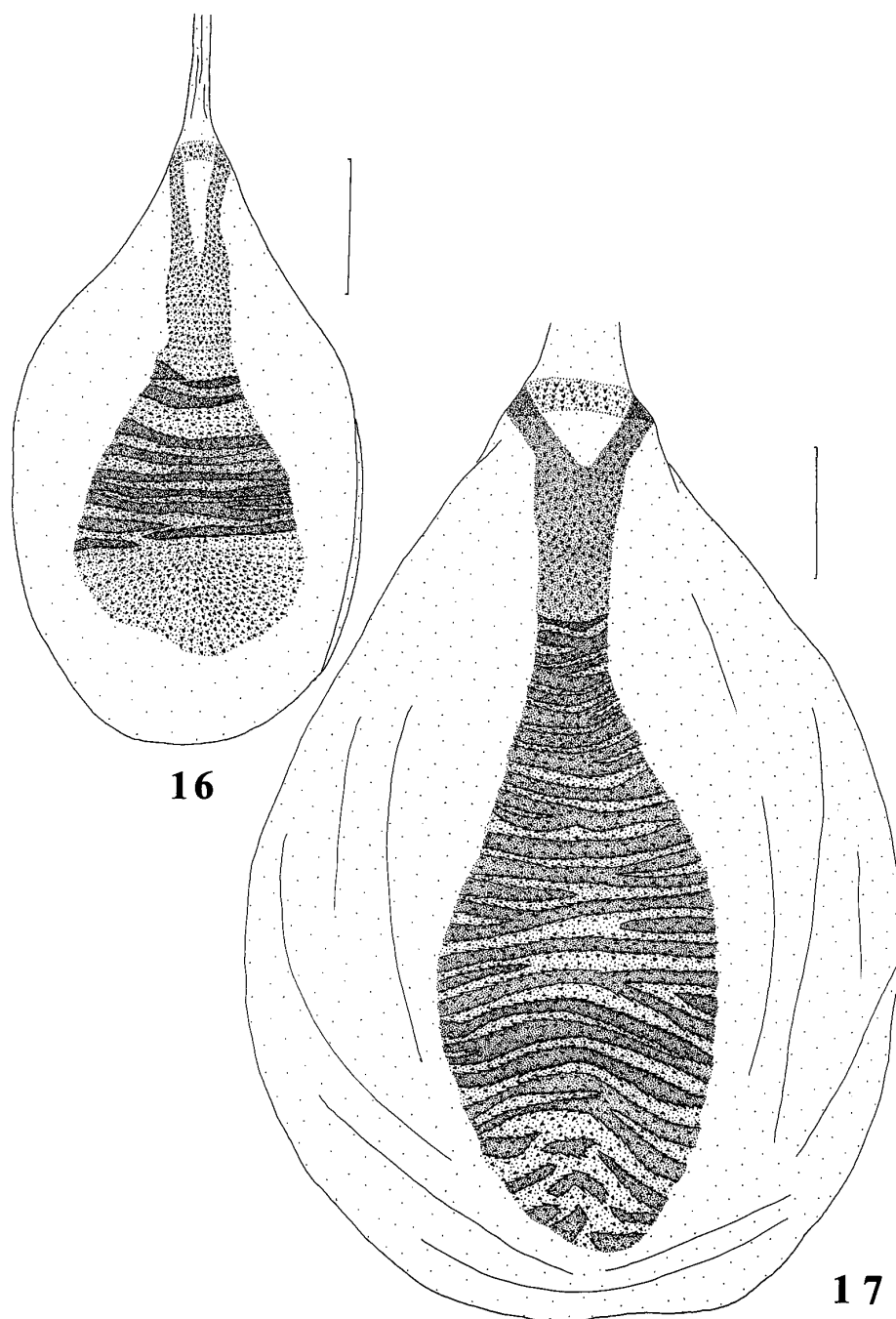


Figs 14-15. Female genitalia of *Melittia* spp. 14. *M. bella* sp. nov., paratype (genital preparation No. GA-129). 15. *M. gorochovi* Gorbunov, 1988 (genital preparation No. GA-116). Scale bar: 0.5 mm.

Besides that, some of the males are in perfect condition. So we take the chance to redescribe this taxon in due detail.

Redescription. Male (Fig. 7). Alar expanse 29.0 mm; body length 15.2 mm; forewing 12.0 mm; antenna 6.3 mm.

Head: antenna dorsally black with dark violet sheen, with a few snow-white scales at anterior margin and with a yellow elongate spot at posterior margin distally; ventrally light brown with a few yellow scales medially at base; frons grey-brown with purple sheen, with a narrow pale yellow stripe laterally; labial palpus basally pale yellow to yellow, apically black mixed with yellow, medial joint yellow with two narrow, vague, black stripes both ventro-internally and ventro-externally; vertex mixed with black and



Figs 16-17. Corpus bursae of *Melittia* spp. 16. *M. bella* sp. nov., paratype (genital preparation No. GA-129). 17. *M. gorochovi* Gorbunov, 1988 (genital preparation No. GA-116). Scale bar : 0.5 mm.

yellow scales, with two small yellow spots at ocelli both anteriorly and posteriorly; pericephalic hairs dorsally mixed with olive, black and yellow scales, laterally pale yellow to white. Thorax: patagium olive-green with a small yellow spot laterally; tegula and mesothorax dark brown to black with violet sheen, densely covered with olive-green scales, entirely masking background coloration; metathorax mixed with olive-green to dirty yellow hair-like scales; laterally mixed with grey-brown with violet sheen, pale yellow and yellow-olive scales. Legs: fore coxa pale yellow with admixture

of individual black scales; fore femur pale yellow with a narrow black stripe at anterior margin; fore tibia and tarsus yellow with a narrow black stripe dorsally; mid femur in anterior half white to pale yellow, posterior half mixed with black, pale yellow and yellow scales; mid tibia internally black, externally pale yellow ventrally and olive-brown dorsally, with a small white spot with blue hue medially and with a black spot at base of spurs; latter entirely black with purple sheen; mid tarsus black with green-violet sheen, with a broad white ring with blue-violet hue basally in basal tarsomere, and with a few white scales at base of 2nd and 3rd tarsomeres; hind femur black with bronze sheen, with a narrow white anterior margin; hind tibia internally black, externally narrowly black at base; ventro-externally black with violet sheen, with a small white spot; dorso-externally, light brown-yellow with a small snow-white spot medially and with a small yellow spot at base of apical spurs; dorsally, yellow with a few light brown-orange scales at tip; spurs black, an exterior apical spur with a small pale yellow spot internally at tip; hind tarsus black with green-violet sheen, with a small pale yellow to yellow spot medio-externally. Abdomen: dorsally black with blue-violet sheen; tergites 1 and 2 densely covered with dirty olive-green scales; tergites 2-5 each with a narrow, yellow, distal margin; tergites 6 and 7 with distal margin narrowly white with blue hue; tergites 3 and 5 with admixture of yellow scales medially, entirely pale yellow ventrally; anal tuft small, black with a few yellow scales dorsally and pale yellow scales laterally.

Forewing: basally, densely covered with yellow-olive and light brownish scales; costal margin and veins within external transparent area black with violet sheen; Cu-stem, anal margin and discal spot black with violet sheen, with a few light brownish scales; apical area black with violet sheen, with a few snow-white scales with bluish hue; discal spot relatively broad with a long, narrow, cuneiform projection proximally; transparent areas well-developed; external transparent area relatively large, divided into five cells (cell between veins R_4 and R_5 absent), level to vein M_1 *ca* 2.5 times as broad as discal spot and *ca* 1.5 times as broad as apical area; cilia dark brown with bronze-violet sheen. Hindwing: transparent; anal area black with violet sheen, densely covered with yellow-olive scales and hairs; veins, discal spot and outer margin black with violet sheen; discal spot extremely narrow and nearly undeveloped; outer margin *ca* thrice narrower than cilia; cilia dark brown with bronze-violet sheen.

Male genitalia. See Gorbunov & Arita, in press: fig. 9.

Female (Fig. 8). More robust and somewhat larger than male: alar expanse 32.5 mm; body length 14.7 mm; forewing 14.0 mm; antenna 7.0 mm. Antenna ventro-basally black; mid femur yellow with a few black scales baso-externally; spurs of mid tibia with a yellow tip; tergite 5 of abdomen black distally; ventrally, abdomen with admixture of individual dark brown scales; forewing with costal and anal margins, Cu-stem and discal spot with more numerous light brown scales; external transparent area not so well-developed, level to vein M_1 *ca* twice broader than discal spot and *ca* 1.5 times narrower than apical area. Colour patterns otherwise as in male.

Female genitalia (genital preparation No. GA-116) (Figs 15, 17). Papilla anales slightly sclerotized, covered with relatively short setae; anterior apophysis somewhat longer than posterior apophysis; anterior apophysis with a long narrow appendix baso-ventrally; tergite 8 relatively broad with rather long setae in distal half and with a long setae at inner margin ventrally; ostium bursae opening near posterior margin of sternite 7, broadly well-sclerotized; antrum narrow, membranous; ductus bursae narrow, long, membranous; corpus bursae ovoid, membranous, with signum relatively large, narrowly pear-shaped, entirely with numerous transverse, well-sclerotized, dentate stripes, bifurcate and ringed around base of corpus bursae posteriorly (Fig. 17).

Variability. This species displays virtually no variation in coloration, but old and not so fresh specimens are somewhat paler and with less numerous coloured scales on the thorax, abdomen and forewings. However, the external transparent area of the forewing is relatively variable, especially in males, both in shape (divided into 5-6 cells) and size (Fig. 10). Body sizes vary as follows. Males: alar expanse 27.0-31.0 mm; body length 13.5-17.0 mm; forewing 11.0-13.5 mm; antenna 6.5-7.2 mm; females: alar expanse 30.0-33.0 mm; body length 13.0-15.0 mm; forewing 13.0-14.5 mm; antenna 6.8-7.2 mm.

Diagnosis. See Gorbunov & Arita, in press.

Bionomics. Exact host plant is unknown. The specimens from Thailand were collected in August-November, but those from Vietnam in April-May. Hence this species may prove to have two generations per year.

Habitat. Edges of tropical forest; river valleys; road sides.

Distribution. NE India (Sikkim), Vietnam, Thailand (the first record!).

Material examined. 5 ♂ 1 ♀, Thailand, Chiang Mai, Fang, ca 450 m, 29-31. X. 1985, S. Moriuti, T. Saito & Y. Arita leg. (one male with genital preparation No. 1226 YA, female with genital preparation Nos 1373 YA and GA-116) (OPU); 1 ♂ 2 ♀, Thailand, Chiang Mai, Doi Inthanon (Mae Klang), ca 1,300 m, 8-12. IX. 1987, S. Moriuti, T. Saito, Y. Arita & Y. Yoshiyasu leg. (OPU); 1 ♂, Thailand, Chiang Mai, Ban Toyak, ca 450 m, 13. IX. 1987, S. Moriuti, T. Saito, Y. Arita & Y. Yoshiyasu leg. (OPU); 2 ♂, Thailand, Chantaburi, Plew Chantaburi, 16. VIII. 1981, H. Kuroko, S. Moriuti, Y. Arita & Y. Yoshiyasu leg. (OPU); 1 ♂ 1 ♀, Thailand, 7 km NW of Fang, Horticultural Experimental Station, 30. X-2. XI. 1979, Zool. Mus. Copenhagen Exped. (ZMC).

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摘 要

タイのモモブトスカシバ属 (鱗翅目, スカシバガ科) の新種と未記録種 (有田 豊・Oleg G. Gorbunov)

タイで得られたスカシバガ科, モモブトスカシバ属 *Melittia* Hübner, [1819] の2新種, *M. suko-thai* sp. nov. と *M. bella* sp. nov. を記載し, 東洋熱帯から知られている3種, *M. eurytion* (Westwood, 1848), *M. nepcha* Moore, 1879 および *M. gorochovi* Gorbunov, 1988 をタイから新しく記録した。今までにタイから記録されていた *M. siamica* Walker, [1865] と合わせて *Melittia* 属は6種類になる。

Melittia eurytion (Westwood, 1848) (Figs 1-3, 9, 11-12)

個体の大きさは, 開張 25-34 mm とかなり変化がある。前翅中室外方透明紋も大きさや形にかなりの変異がある (Fig. 9)。食草は不明であるが, 成虫は4-5月, 7-9月に採集されている。また水銀

灯を使った夜間採集の灯に夜明け前に数頭が飛来した。

Melittia nepcha Moore, 1879 (Fig. 4)

インド (ダージリン), ネパール, 北ベトナムから記録があり, 今回タイ北部のチェンマイから 1 ♂ を初めて記録した。

Melittia sukothai sp. nov. (Figs 5, 13)

本種はやや *M. newara* Moore, 1879 に似ているが, 後脚脛節の長毛の前半が *M. newara* では黄色なのに対して本種では白いことで区別される。食草や生態などは不明である。

Melittia bella sp. nov. (Figs 6, 14, 16)

この新種は *amboinensis* グループに非常によく似ている。前翅中室外方透明紋の形でこのグループの *celebica* Le Cerf, 1916, *meeki* Le Cerf, 1916 および *marangana* Le Cerf, 1916 と区別される。2 ♀ がタイの低地で採集されているのみである。

Melittia gorochovi Gorbunov (Figs 7-8, 10, 15, 17)

ベトナムから記載された種であるが, 今回タイからも記録された。タイでは 8-11 月に熱帯林を切り開いた林縁部で採集された。

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